IT Apps

Unit 4

Outcome 1

**IT Applications**

**Unit 4 - Outcome 1**

**A Cut Above**

**Task 1 – Spreadsheet Solution**

Fiona McPhee is the owner and manager of a mobile hair and beauty business trading as “A Cut Above”. The business is generally quite successful and Fiona has found the operating of the business to be rewarding, especially financially. Each year she is contracted by various prestigious large companies to provide makeup and hair alterations and touch-ups to guests at functions such as the Spring Racing Carnival, awards nights and various other corporate functions. The companies provide these services free of charge to their guests and Fiona bills the companies according to the number of touch-up jobs her staff perform.

Fiona set up an information system when she first begun running the business to assist her with the finances of the organisation. It was put together with the objective of making work easier for Fiona so she would also have time to conduct consultations and prepare for future functions. She presently works out her expected costs before-hand then informs the contracting company of the expected charge per job. At the end of the session she needs to calculate the total amount to be charged based on the number of consultations performed. Each staff member keeps a record of the jobs done during the session and Fiona works out the amount they have earned as well as superannuation and tax payable. She can then work out the take home pay of each staff member.

As Fiona performs all of these tasks manually it can be time consuming. The staff are only contracted for each session and they expect to be paid before they leave the job. As she is often tired and rushed when completing the calculations, errors are often made.

Fiona has decided that there must be a more efficient and effective way to complete this process. She has asked you to come up with a solution to her information problem. She has provided you with the following details.

**Staffing**

At a normal function Fiona would provide up to five staff members. Each member will be paid an hourly rate as well as a commission on each job done. These amounts vary according to the experience of the staff member. Staff are also allowed 9% superannuation on all earnings. Relevant tax rates and pay rates have been attached.

|  |  |  |
| --- | --- | --- |
| **Staff Member** | **Hourly Rate ($)** | **Commission Rate (%)** |
| Anne Lueng  Carl Masters  Harvey Wall  Helen Troy  Nerida Beale  Renee Fogarty  Terry Quinn | 25.00  22.00  25.00  18.00  18.00  25.00  22.00 | 5  4  5  3  3  5  4 |

|  |  |  |
| --- | --- | --- |
| **Daily Pay**  **($)** | **Tax Rate (%)** | **Super Rate (%)** |
| 0  120  125  130  135  140  145  150  155  160  165  170  175 | 14.50  15.00  15.50  16.00  16.50  17.00  17.50  18.00  18.50  19.00  19.50  20.00  20.50 | 9  9  9  9  9  9  9  9  9  9  9  9  9 |

**Other Costs**

Each job includes a certain level of fixed costs in relation to transporting the staff and equipment to the venue and professional indemnity and public liability insurance. These costs usually average around $2,000 per job, although this can vary.

As well as staffing costs Fiona must cover the use of makeup and hair products for each client. The current cost per job is $5. This is known as a variable cost.

**Charges per client**

Fiona works on a mark-up for each job. This means she adds 50% onto the cost per consultation to work out how much she will charge per function.

**Output**

She has decided that she would like the solution to provide her with a range of information including:

* A printout for each client that lists the total number of consultations, price per consultation and the total charge
* A printout of the wages details for each event which states for each employee their gross amount earned (hourly & commission), tax deducted, super paid and net pay
* A printout for her business records that shows a breakdown of all costs, the mark-up added on and the total charge to the client.
* A pie chart that shows the composition of the total charged per client.
* A menu page that allows her to navigate between sheets. This should be the first page to appear when the file is opened.

**Other features she requires from the solution include:**

* Protection for cells so she does not accidentally delete formulas or text
* Efficient and simple data entry for Fiona
* Easy navigation around the various area of the spreadsheet
* Amounts not being built into formulas (eg: variable costs) which would make changing them impossible without adjusting the formulas.
* Methods of validation to restrict the chances of incorrect information being produced.

**Problem-solving steps**

1. **Analysis – *you have 40 minutes to do this task on a separate sheet provided*. 10 Marks**
2. Provide an overview of the organisation including its purpose, function and goals.
3. Define the problem – describe the current problem faced by Fiona in your own words by providing a succinct and logical problem statement.
4. Identify the goals of the new information system.
5. Identify any technical and non-technical constraints - the constraints should identify any *restrictions* on the solution.
6. Explain how the new information system will enable the creation of the information needed by the organisation and will benefit the organisation.
7. **Design a solution 10 marks**
8. Produce fully annotated **layout diagrams** for all aspects of the spreadsheet solution and a **Structure chart**

That is: sketch your spreadsheet solution (including any graphs) and annotate this to indicate formats and conventions, calculations, and formulas and functions that will be used.

1. Identify data validation tests. That is: use manual and electronic validation methods that will be used to validate data entered and output produced.
2. Identify a set of test data to test your solution and the validation procedures determined above. The test data should include typical (correct) data, unusual data and incorrect data.
3. Develop evaluation criteria to determine the ability of the solution and the user documentation to meet the needs of the organisation.

**Development 14 marks**

**3.1 Design** a solution to the problem by:

1. **Ensuring data quality by using both manual and electronic validation techniques**. Annotate the solution to illustrate the techniques and procedures used to validate the solution and/or output: i.e., submit printouts that describe and identify three validation techniques undertaken. Hence you need to:

* check spelling and grammar electronically and manually, where appropriate
* check data quality of information produced – i.e., accuracy, reasonableness, reliability, relevance, flexibility of access and timeliness of data
* check calculations using a calculator
* employ electronic validation rules and test that these work as expected

1. **Using appropriate formatting and software conventions in producing your spreadsheet solution**. Submit printouts that describe and identify four formatting conventions employed. Accepted formats and conventions:

## Text

* + one space after all punctuation
  + consistency with capitalisation of headings and names
  + consistency with margin widths, page numbering, column spacing, indention
  + consistent and minimal use of font sizes
  + consistency with dates, for example, 27 April 2001. Note: no punctuation; date/month/year in full
  + use a serif font (has small strokes at the end of the character) for paragraph text
  + use a sans-serif font for headings, tables and diagrams.

## Numeric Information

* + money values usually have two decimal places or none
  + numbers are right-aligned in columns
  + align decimal points (within a column and in totals)
  + position labels next to single numbers, for example, $5
  + position labels for columns of numbers at the top of the column

## Graphics and Colour

* + graphs and charts have titles
  + x-axis and y-axis must be labelled
  + use a key if more than one set of data is provided on the same graph or chart
  + include author identification and/or source of data, date and a file name (if appropriate)
  + include unit of measurement on relevant axis
  + label each segment of a pie chart
  + arrange segments (starting a 12 o'clock position) from largest to smallest
  + include absolute figures as well as percentages
  + choose colours that match the information being discussed.

1. **Using efficient software functions**. Use a range of functions, techniques and procedures to produce a solution that meets current and future organisation needs. Submit printouts that describe and identify three software functions employed Examples of functions that could be employed are:
   * lookup tables
   * conditional formatting
   * conditional statements
   * cell protection
   * insert notes/comments
   * command buttons
   * naming cell / range
   * electronic validation
   * sheet referencing
   * formatting/layout
   * drop down boxes
   * relative and absolute cell references
   * macros

**3.2 Testing 6 marks**

1. Conduct various tests using the test data defined in the Design phase and record and amend errors. Annotate two test output samples to highlight the test data used, anticipated and actual outcomes, errors detected and annotation of next output showing where errors have been corrected. Ensure test outputs show where electronic validation tests occurred. Submit:
   * fully detailed and complete test tables to show the entire intended testing to be done (see below)
   * annotated printouts, which describe and identify at least three testing techniques used

|  |  |
| --- | --- |
| **Feature Tested** | **Description** |
| Testing of the solution – the solution meets the desired goals |  |
| Testing of the output – output is as expected – it matches the design and test data   * Accuracy of information * Relevance and completeness of information * Correct formats and conventions are adhered * Message of the output is clear and understandable/readable and content is appropriate |  |
| Functionality – the solution performs all of the required functions including the functionality involved with producing output; software performs all the phases of information processing that it has been designed to do | Describe what you are testing – see test table below |
| Presentation – output produced matches the design of each output |  |
| Use of colour |  |
| Use of graphics |  |
| Clear layout |  |
| Usability – ease of use |  |
| Accessibility – solution can be used by a range of users and output is clear and timely for all users |  |
| User testing - Test the user documentation and solution (see below). |  |

**Functionality**

|  |  |  |  |
| --- | --- | --- | --- |
| **Feature tested** | **Sample/Test Data** | **Expected Result** | **Actual Result** |
| Where necessary or possible, enter sample data that you will use to test the feature. Include a “correct” value, “incorrect” value and extraordinary value | Describe what you expect to occur after you have tested the feature. | Describe what occurred after you tested the feature. |
| Functions - test the data to ensure that all functions are correct and operate accurately |
| Formulas – test the data to perform a manual set of calculations for all formulae in the solution. Thus you can easily identify formulae that have been incorrectly entered |
| Data manipulation – test data that will highlight any errors in the manipulation process such as sorting, conditional formatting, creation of graphs |
| Data validation – check any validation rules established |
| Data formatting – use test data which checks that the full range of data is catered for by the solution. For example, that column widths are appropriate; spacing is adequate throughout, etc |

**3.3 On-Screen Documentation** – ***this is TASK 2 on the Criteria sheet*  10 marks**

1. Use the storyboard and site plan templates to design on-screen user documentation. Your documentation should be a comprehensive guide on **how to use the solution**, Instructions are required for the following tasks:

|  |  |
| --- | --- |
| * Open the file * Add / edit / delete data * Print sheet | * Close the file * Save the file |

1. . Use the checklist below to ensure that your user documentation is effective.

|  |  |
| --- | --- |
| **Checkpoints** | **✓** |
| * Presentation is clear, attractive, easy to read, easy to follow, well set out, suitable for the person in the organisation who will have the task of maintaining and adding to the solution in the future |  |
| * Any assumptions made a clearly stated at the start of the User Documentation |  |
| * White space is used well |  |
| * Language is appropriate for intended users |  |
| * Font type and size are suitable |  |
| * All important procedures to be followed are included |  |
| * Security is adequately addressed |  |
| * Instructions are in the correct order |  |
| * Given useful ‘Tips’ and ‘Warnings’ |  |
| * Suggested what to do to prevent disasters being devastating |  |
| * Instructions can be carried out easily by the intended users |  |
| * Effectively used annotated illustrations |  |
| * Simple and clear instructions – not complex and difficult |  |
| * Tested the instructions as if you were a ‘basic user’ and made changes as a result |  |

1. **Evaluation** – ***this is TASK 3 on the Criteria sheet* 10 marks**

Evaluate the solution against your criteria developed in 2 d).

Evaluate the ability of the solution and the user documentation to meet the needs of the organisation and enable its ongoing use by annotating them or explaining to indicate:

1. How the solution saves the organisation time and money
2. How easy it is for users to update information
3. How accurate the output is
4. How comprehensive (complete and relevant) the output is
5. How well the solution meets the information needs of the organisation
6. How well the solution improves the presentation and communication of the message
7. How the user documentation contains complete and accurate information